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Perceptions of Augmentative and Alternative Communication Modes That Include Non-Evidence Based Practices

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Perceptions of Augmentative and Alternative Communication Modes That Include Non-Evidence Based Practices

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Dedication

This dissertation is dedicated to my girls, Hunter and Emma. You both have sacrificed so much while I have been working towards this degree. You inspire me everyday to be the best mom I can be for you. Your support and willingness to eat a lot of takeout and delivery during the writing process is appreciated more than you know. I promise many home cooked meals now that we have completed this chapter of our lives. I love you both very much and am proud of you in so many different ways.

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Perceptions of Augmentative and Alternative Communication Modes That Include Non-Evidence Based Practice

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For families of individuals with developmental disabilities who have limited or no language skills, finding a mode of communication that provides their child the ability to speak is imperative. Parents can become desperate for an answer and may try multiple options to find something that works for their child. Rapid Prompting Method (RPM) is a form of communication that closely approximates facilitated communication. RPM requires the assistance of a communicative partner who holds a "letterboard" that the student uses to communicate with the world. The primary concern with RPM is that the communicative partner may be the source of communication rather than the target student. As of yet, there have been no studies to test this theory, but families and special educators continue to choose RPM as a mode of communication. This study evaluated the perceptions and attitudes of special education teachers in training toward RPM relative to evidence-based communication systems. Specifically, individuals were surveyed to determine the social validity of RPM in comparison to other forms of communication that are evidence based (i.e., picture exchange communication systems; voice output device). Results indicated that RPM was rated lower across all areas of social validity in comparison to evidence-based communication interventions.

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Chapter 1: Introduction

The ability to communicate basic needs is something that most individuals are able to do without complication. However, communication deficits are a reality that others experience that create struggles not only for the individual but also for caregivers who strive to find ways to communicate with their loved ones. Individuals with intellectual disability and, in many cases, autism spectrum disorders (ASD) often have delays that impede their ability to communicate with others. Determining the best mode of communication for an individual with special needs is of vital importance. As with any decision regarding instruction for an individual with special needs, decisions should be based on data and assessment and any recommendations for intervention should be evidence-based practice (IDEA, 2004).

Unfortunately, there may be times in which parents of individuals with special needs who require a specific intervention for communication request use of communication strategies that are controversial and not research based in order to have conversations with "the child they always wanted" (Wombles, 2015). An example of such a strategy is facilitated communication. Facilitated Communication (FC) is a technique used for communication where individuals who have complex communication needs and are nonverbal. When using FC, individuals are physically supported by a facilitator in order to select and type letters on a keyboard (Schlosser et al., 2014). Although facilitated communication has been widely discredited following an unfortunate history of wrongful allegations (Boynton, 2012; Konstantareas, 1998) and empirical demonstrations of its lack of validity (Jacobson, Mulick, & Schwartz, 1995; Mostert, 2001; and Simpson & Myles,

1995), the practice is still used. Further, relatively recent examples of its damaging effects exist. For example, a recent case that gained widespread attention was a case involving a tenured professor named Anna Stubblefield. After showing a film about facilitated communication to her class, a student approached her about the technique and solicited advice about the possibility of using it with his brother, D.J., who had cerebral palsy. Stubblefield had attended a workshop on the technique and offered to help. Subsequently, two years later, Stubblefield facilitated a conversation with D.J. in front of his mother and brother in which it was stated that they were in love and in a sexual relationship. Stubblefield was eventually found guilty of aggravated sexual assault and sentenced to 12 years in prison (Engber, 2016). A similar case occurred in 2007 in which Aislinn Wendrow, who had a diagnosis of autism and attended a high school in Walled Lake Consolidated School District, was exposed to facilitated communication. Aislinn's parents requested that facilitated communication be used as her main mode of communication as part of her Individualized Education Plan (IEP) and the school district agreed. In November of 2007, allegations of sexual abuse against the father were made via facilitated communication. Both parents were arrested, both Aislinn and her brother were placed in child custody, and the case went to trial. Charges were eventually dropped and the children were returned to their home when it was proven that Aislinn had not made the allegations herself but that the person facilitating her communication had authored the claims (Levy, 2011; ABC News, 2012).

Individuals with Disabilities Education Act, Title II, and Section 504

In the public school setting, there are many factors that impact determination of programming and instructional models used to address skill deficits for students with special needs, including students who have complex communication needs. While IDEA requires that schools provide a "free and appropriate public education" (FAPE) to individuals who have special needs, Title II has specific information about communication. Recent court findings in the 9th Circuit of Appeals delineate that the requirements for communication under Title II is different than IDEA; but public schools providing services for an individual with complex communication needs, must consider both IDEA and Title II when determining how to best meet the individual's needs. While such cases do not change the law in any way they do set a precedent for schools in terms of how they handle requests from parents with regard to which devices are identified for use in the school setting. Because of K.M. V. TUSTIN UNIFIED SCH. DIST. (discussed below) and the subsequent Office of Civil Rights announcements, schools must at least consider parents' requests and potentially include their requests as part of the assessments conducted to determine what would be the most appropriate form of AAC for a student. In such instances, when including a parents suggested intervention as part of the assessment, a school district may have to provide a service that would not typically be provided as part of IDEA.

Office of Civil Rights

In November 2014, the U.S. Department of Justice and U.S. Department of Education, Offices of Civil Rights (OCR) released a statement with information regarding

three federal laws and the responsibility public schools have to address communication needs of students with special needs. While IDEA addresses student needs with FAPE, Title II and Section 504 each address communication in very different ways. OCR states that while a student's individual education plan (IEP) addressed through IDEA can sometimes meet the requirements of Title II, there are times services may be required under Title II that are not required by IDEA (Frequently Asked Questions on Effective Communication for Students with Hearing, Vision, or Speech Disabilities in Public Elementary and Secondary Schools, 2014).

An example of this can be found in the 9th Circuit of Appeals findings for K.M. V. TUSTIN UNIFIED SCH. DIST. The question being addressed in the findings dealt with whether the school districts were in compliance with Title II if they were meeting the obligations of IDEA. The plaintiffs in this case argued that while they were receiving special education services that were addressing their communication needs, they did not believe the school district was complying with the effective communication obligations under Title II. The court found that being in compliance with IDEA does not necessarily always mean that compliance with Title II is also met. Because of this, briefs were filed in support of the plaintiffs in regards to Title II ("K. M. v. Tustin Unified School District," 2013). The result does not dictate that school districts must use a form of communication that parents or caregivers request, but their preferences must be a consideration when assessing types of AAC for students with complex communication needs. This can be a benefit to all involved as an assistive technology assessment can provide quantifiable, objective data to show which type of AAC would be the most beneficial for the individual.

Augmentative and Alternative Communication

AAC is the use of devices, either high-tech or low-tech, that can be used to help with communication for individuals with complex communication needs (Ganz, 2014a). The goal of AAC is to provide a mode of communication and improve verbal behavior such as mands for individuals who have limited or no communication skills. Providing individuals with limited communication the ability to have functional communication is crucial for an individual's quality of life. Low-tech devices, such as picture exchange systems with printed images or words, that allow individuals to communicate, have been used for years (Hourcade, Pilotte, West, & Parette, 2004). With the invention of portable devices, such as tablets and smartphones, the use of high tech devices and apps created specifically for communication have become very common (Lorah, Parnell, Whitby, & Hantula, 2014).

Rapid Prompting Method and Facilitated Communication

As stated by Soma Mukhopadhyay, the developer of the approach, Soma® Rapid Prompting™ Method (RPM) is, "a teaching method tailored to each student's open learning channels." She also states, "RPM uses a 'Teach-Ask' paradigm for eliciting responses through intensive verbal, auditory, visual and/or tactile prompts… Student responses evolve from picking up answers, to pointing, to typing and writing which reveals students' comprehension, academic abilities and eventually, conversational skills. RPM is a low-tech approach in that is requires only an instructor, student, paper and pencil," (What is Rapid Prompting™ Method, 2016). Essentially, RPM is an intervention designed by a

parent that includes a communicative partner, or facilitator, who holds a letterboard in the air in front of the nonverbal individual and moves the board while the nonverbal individual moves their hand (Tostanoski, Lang, Raulston, Carnett, & Davis, 2014). While technically the letterboard might be considered by some as a low-tech type of AAC, RPM is considered a controversial methodology as there is no research to support the use of RPM as an evidence based practice for communication. Many people question the authenticity of who is actually communicating with the letterboard – the individual who is nonverbal or the person holding and moving the board (e.g., Tostanoski et al., 2014; Volkmar, Paul, Pelphrey, & Powers, 2013).

One of the biggest concerns with RPM is the lack of peer-reviewed studies evaluating the procedure. Mukhopadhyay has only allowed one study to be conducted (see also Chapter 2 of this document). In the study (i.e., Chen, Yoder, Ganzel, Goodwin, & Belmonte, 2012), the authors stated explicitly that in conducting their study, it was their intention to "defer, for the moment, the crucial question of whether the communications produced during RPM therapy are genuine" (Chen et al., 2012). In other words, the authors did not evaluate whether the observed communication was produced by the individual with special needs or if, as with FC, the person holding the letterboard was responsible. Chen et al. stated that the purpose of the study was to examine (a) if the use of RPM would increase joint attention through eye gaze, (b) if RPM would decrease repetitive behaviors, (c) if prompts were associated with decreases in repetitive behaviors, and (d) possible increases in complexity and accuracy. The researchers also examined possible correlations between types of prompts used. Videos of nine children were provided to the researchers by the

Helping Autism through Learning and Outreach (HALO) organization that is owned and directed by Mukhopadhyay. Each video had Mukhopadhyay as the therapist working with an individual with autism. Ultimately, Chen et al. reported ambiguous results. First, the authors asked if RPM would increase joint attention. The results indicated RPM did not increase joint attention. Second, the authors asked if RPM would decrease repetitive behaviors. A decrease in repetitive behaviors was reported but because the study did not employ a valid experimental design, the decrease could not be attributed to RPM. Further, Mukhopadhyay has stated that decreases in repetitive behaviors is related to increases in joint attention produced by RPM; however, Chen et al. found no evidence of increases in joint attention. Third, the authors asked whether particular prompts were associated with potential decreases in repetitive behaviors. The results indicated rates of repetitive behaviors were not correlated with any particular prompt type. Fourth, the authors analyzed sessions to assess whether increases in choice complexity would result in changes in correct responding. The results indicated no correlation between the two factors. Finally, no correlation was found in terms of types of prompts used with accurate responses or decreases repetitive behaviors.

While the information found on the RPM website states that RPM and FC are not similar and that RPM is not derived from FC, there are many parallels between the two interventions (What is Rapid Prompting^{TM} Method, 2016; Tostanoski et al., 2014). Anecdotally, in conversations the author of this paper has had with families who use RPM, the question of whether or not RPM is similar to FC sparks emotional responses with adamant claims that RPM is in no way similar. Tostanoski et al. (2014) compared RPM

and FC to show the similarities between the two interventions. First, they pointed out that the creators of both RPM and FC describe their interventions as ways to help individuals with intellectual disabilities access abilities that are "untapped" or "unexpected" (Tostanoski et al., 2014). Tostanoski et al. also broke down the components of each procedure based on the Checklist of Science and Pseudoscience described by Finn, Bothe, and Bramlett (2005). While FC meets 8 out of the 10 components of the checklist, RPM meets all 10 components that would identify it as a pseudoscience (Tostanoski et al., 2014).

Position Statements

Because of the prominent use of such pseudoscience-based procedures such as RPM and FC, many organizations have developed position statements against the use of such interventions. When FC's popularity was at its height in the mid 1990s, the Association for Behavior Analysis International (ABAI) released a statement in 1995 stating that "there is no objective, scientifically sound evidence that FC has any direct therapeutic benefit" (ABAI, 1995). ABAI also stated that FC should not be confused with other sound researched-based methods of communication that have been tested and seen to truly be effective. ABAI ultimately stated that any recommendation for use of FC was considered "unwarranted and unethical" (ABAI, 1995).

That same year, the American Speech-Language-Hearing Association (ASHA) released a position statement also stating that evidence had not been produced to support the effectiveness of FC. Their statement also stated that studies have shown the person facilitating, via physically prompting, is indeed the author of any message relayed and not

the individual with a disability. While ASHA explained all of this in their position statement, they stopped short of asserting the method should not be used. ASHA stated a speech pathologist should "inform prospective clients… that currently the scientific validity and reliability of facilitated communication have not been established, and should obtain their informed consent before using the technique" (ASHA, 1995).

In 1993, the American Academy of Child and Adolescent Psychiatry (AACAP) released a position statement that studies had repeatedly shown that FC is invalid and that no message gained through the use of FC should be used for any decision making. The AACAP reviewed this position statement in 2008 with no changes to the statement. Additionally, the American Academy of Pediatrics (AACAP, 1993) endorsed the AACAP position.

The American Academy of Pediatrics (AAP, 1998) provided its own statement on FC as well. The Committee on Children with Disabilities published a statement addressing FC along with Auditory Integration Training for individuals with autism. In regards to FC, AAP stated that multiple studies have found FC to be invalid, not reliable; nor are they replicable. After citing several studies, they stated FC is ineffective and harmful. Pediatricians were given recommendations for guidance on how to assist families to find alternative, scientifically sound modes of communication (AAP, 1998). This position was re-affirmed in 2006.

The Association for Science in Autism Treatment (ASAT) stated in their position statement that research has shown FC does not improve language and, in fact, shows the

facilitator controls messages. Their position is that FC is not a useful tool for individuals with autism (ASAT, n.d.).

The International Society for Augmentative and Alternative Communication (ISAAC) published a position statement in 2014. They stated their increasing concern based on the fact that support of FC consisted of anecdotal evidence; the negative impact FC has been known to have on stakeholders' lives including sexual abuse allegations; and published research that has shown the author of communication during FC is the facilitator. ISAAC also stated that published studies based on descriptive analysis have not answered the question of who authored the messages during FC. They also pointed out that FC violates the rights of persons described by the United Nations Conventions because the use of FC prevents individuals from being able to use their own "voice" to communicate. Based on their findings, ISAAC does not support FC as a valid form of AAC and does not recommend it as an intervention to address communication (ISAAC, 2014).

In 1994, the American Psychological Association (APA, 1994) position statement asserted that based on the amount of research showing the facilitator is the author of messages provided through FC, the procedure represents an immediate threat to the civil and human rights of individuals with intellectual disability and autism. The APA assertion was based on allegations of abuse, reports on health, responses to assessments, and psychological treatment based on answers garnered through FC. Therefore, APA stated FC is an unproven method with no research to support its use (APA, 1994). APA followed up with an article in 2003 stating that position statements such as theirs, and others, have helped to drive research in the direction of "real solutions" (APA, 2003).

Last, the American Association on Mental Retardation, now known as The American Association on Intellectual and Development Disabilities (AAIDD) published a statement in 1994 stating that the organization did not support the use of FC because of the many controlled studies that have invalidated the method. They also strongly encouraged the use and development of valid forms of AAC (AAMR, 1994).

Statements specific to RPM have also been provided by organizations and agencies. Texas Statewide Leadership for Autism Training (TSLAT) is part of the Texas Education Agency's (TEA) Statewide Leadership Functions and Projects that provides access to processes and trainings for multiple components of special education to educators throughout the state of Texas (TEA, n.d.). TSLAT provides training, support, and access to resources for educators who work with students with autism. As part of their TSLAT manual, Texas Autism Resource Guide for Effective Teaching, they have position statements on common evaluations and interventions used with individuals with autism. While they have a position statement for FC that states overall research does not support its use, they also have a statement specific to RPM. TSLAT's statement asserted that RPM is not evidence based and is similar to other "dangerous and ineffective interventions" and that use of RPM is potentially unsafe (TSLAT, n.d.) The Summit Center is a large provider of services for individuals with intellectual and developmental disabilities throughout the state of New York. They published a position statement against the use of RPM in which they stated that there is no evidence to support its use and that the one study on the procedure, which they asserted was flawed, suggested that RPM increases prompt dependency (The Summit Center, 2016).

The Cambridge Center for Behavioral Studies has reviewed RPM and made recommendations based on their reviews of the literature. They published in their newsletter a review of RPM showing that the only articles that could be found were book reviews based on books Mukhopadhyay has published about RPM as well as magazine articles that "provided human-interest stories" and did not have studies with controls in place to test the validity of this approach (Zane, 2013). With this information and additional questions about the validity of RPM, their recommendation was that practitioners should not use or recommend RPM and should utilize AAC devices for communication that are evidence based. They also stated that RPM should only be used in research settings in order to test the effectiveness and validity of this method (Zane, 2013).

ASAT also published a brief review of RPM stating that no studies had been published to date and recommended that research should be conducted to evaluate the validity of this method. They also encouraged practitioners to fully explain to families the fact this method is untested and to seriously evaluate RPM before making any decisions (ASAT, 2013).

SOCIAL VALIDITY

Social validity refers to the social significance and acceptability of an intervention; it has been defined as assessing the value of behavior change and the treatments that are used to accomplish them (Cooper, Heron, and Heward, 2007). While behavior change is ultimately the most important component of an intervention package, acceptance and satisfaction by the individual involved in any study, along with that person's caregivers

can have a significant impact on the effectiveness of the intervention in the short and long term (Kazdin, 1977). Wolf (1978) recommended that researchers focus on social validity in terms of three areas typically targeted by single case designs within the field of applied behavior analysis (ABA) including social validation of (a) the goals of the research, (b) the procedures used, and (c) the effects of the intervention being studied (Wolf, 1978). Researchers, consultants, and educators in the field of ABA rely heavily on assessment and data to drive their decision-making when determining the best interventions to use to address deficits of students with special needs. They also focus on methods that are known to be effective and evidence-based, but social validation should be a consideration for interventions as well (Kazdin, 1977).

In the field of ABA, Wolf (1978) first addressed social validity as an essential, subjective component to intervention. The three areas of research he recommended for discussing social validation with those affected by the intervention included (a) goals, (b) the intervention itself in terms of procedures, and (c) the effects of the intervention. When addressing goals, Wolf indicated that it would be important to ask the participants themselves or their caregivers about whether the goals were appropriate and addressed targeted areas of need for the individual involved in the study. When seeking social validation of the procedures, Wolf asserted that researchers should solicit feedback from the individuals and/or caregivers about the procedures used as part of the intervention (i.e., do the participants see the procedures as acceptable?). The importance of this step was considered key because if they do not perceive the procedures as acceptable or doable, the likelihood of the intervention continuing when the study is complete was considered low.

Finally, assessing social validity of the effects of the intervention should be assessed to see if participants were happy with the effects of the intervention (Wolf, 1978).

Kennedy (2002) added to the discussion of social validity by proposing that maintenance, or follow-up data could be used as an indicator for social validity. An important point made by the author was that by taking into account the goals, procedures, and effects of an intervention, participants of a study might emphatically agree with all areas of an intervention, yet when follow-up is conducted months after an intervention has been utilized, data may indicate lack of use or correct implementation. By this objective, measureable standard, it would indicate the intervention was not effective or socially valid (Kennedy, 2002).

While there is much discussion about the use of social validity in research and the importance of such measures that should be conducted as part of research, trends in data pertaining to the inclusion of such measure in published studies continues to be low. A literature review (i.e., Kennedy, 1992) of articles published in two journals (i.e., *Behavior* 1977-1990; *Journal of Applied Behavior Analysis* 1968-1990) looked at how often social validity was assessed and how each article assessed for this. This review reported that less than 20% of all research articles published throughout this time span reported social validation (Kennedy, 1992).

An additional review (i.e., Carr, Austin, Britton, Kellum, & Bailey, 1999) of the *Journal of Applied Behavior Analysis* examined every article published in a 31-year time span to see if social validation was a component of each article. Specifically, Carr et al. was an extension of the previous synthesis conducted by Kennedy (1992) that looked at

outcome and treatment acceptability measures while also looking at these measures in both analogue and naturalistic settings. While trends did seem to increase after the initial publication of Wolf (1978), these trends tapered and remained steady at around 20% for the last decade documented in the review (Carr et al., 1999).

Schlosser (1999) conducted a review of social validation specific to the use of AAC for articles appearing in the journal *Augmentative and Alternative Communication* from 1985 to 1997. This analysis looked specifically at single case designs and found that only 12.5% of these studies included a form of social validation. Schlosser (1999) assessed whether social validity was conducted, who was assessed (i.e., immediate community, extended community), and how (i.e., direct, indirect). The review then analyzed the types of social validation completed based on Kazdin (1977) and Wolf (1978) suggestions of focusing on goals, treatment, and outcomes. While the review only focused on one journal as opposed to multiple journals (e.g., Kennedy, 1992; Carr et al., 1999), the goal of this review had a different purpose in that Schlosser did not focus on percentage of studies that included measures of social validity. Rather, the purpose of the review was to help create a framework for clinicians when determining types of social validity to use when conducting their own research (Schlosser, 1999). This suggested framework included not only Wolf's original recommendations for social validity but proposed considering distinct social validation procedures for the various people affected by the intervention and how to specifically apply social validity measures (Schlosser, 1999).

CONCLUSION

There are many factors to consider when choosing an AAC device for an individual with special needs. In the public school setting, it's common for the speech pathologist (SLP) to conduct an AT evaluation to determine the best device to use for individuals with severe communication skills deficits. This can be limiting based on the SLP's and other special educator's knowledge of specific devices (Costigan & Light, 2010). Based on the data from this assessment, a recommendation is typically made and a system is put into place in the classroom setting. Since the adoption of IDEA, school districts have focused on providing access to interventions and curriculum that are considered research based. Recently, there have been situations in which parents do not agree with the recommendations schools are making for AT and while the school is providing FAPE and what is required under IDEA, parents may challenge their student's ability to access appropriate communication through other means (i.e., 504; ADA). In these situations, it is clear the school districts are making recommendations the parents or caregivers disagree with. There is a risk that the recommendations are made without assessing the social importance of the goals, intervention, or outcomes from the family members who will be an important part of the success of any intervention recommended. Therefore, this study will examine the social validity of AAC devices that are commonly recommended by public schools as well as a communication approach parents have increasingly been requesting (i.e., RPM) as a result of anecdotal views regarding the effectiveness of the device.

RESEARCH QUESTION

In the current study, I assessed special education teachers in-training views in terms of the social validity (i.e., intelligibility, ease of acquisition, effectiveness, preference) pertaining to different types of AAC devices that are commonly used or requested in the school setting. In addition, I compared social validity outcomes pertaining to common AAC procedures to social validity outcomes pertaining to RPM.

Future special education teachers were chosen for this study as they spend a large portion of each day of a child's life during their school age years. Because of this, they are typically charged with teaching communication skills to individuals with complex communication needs. Their perception of the different modes of communication, whether they be evidence-based or not, is important as this can impact future success and effectiveness of recommended interventions.

Chapter 2: Review of the Literature

In the following chapter, a review of the literature is presented. This review of the literature will (a) review research that has investigated communication interventions for individuals with intellectual disabilities and autism, (b) analyze social validity assessments that were used to determine if the goals, intervention, or effects of each study were considered when determining the intervention used, and (c) summarize how this review informed the design and methodology presented in chapter three.

Communication Needs of Individuals with Intellectual Disabilities and Autism

Individuals with complex communication needs (CCN) require intensive instruction in functional communication in order to develop skills to communicate their basic needs with others. When looking at demographics of preschool age children who are receiving special education services, 12% of those students required communication intervention with some type of Augmentative and Alternative Communication (AAC) (Binger & Light, 2006). While Individuals with Disabilities Education Act (IDEA) requires the Individual Education Plan (IEP) team to consider assistive technology needs of students with special needs, there are no formalized standards as to how this be done ("IDEA (20 U.S.C. 1414(d)(3)(B)(v))," 2004). When reviewing methods that are typically used to determine AAC use, it has been noted that there are limited guidelines for assessment (Dietz, Quach, Lund, & McKelvey, 2012). From the caregiver perspective, parents have reported that when AAC assessments have occurred, professionals have not included them in the assessment process when determining which device to use. In the same study, parents

have also indicated that the lack of their input affected their use, or lack thereof, of what was recommended as part of the assessment (McNaughton et al., 2008).

SOCIAL VALIDITY ASSESSMENT

Social validity refers to the assessment of the acceptability of interventions by participants and the caregivers who are impacted by the research in which they participate (Kazdin, 1977). Wolf (1978) suggested validation in three areas that are frequently addressed in research conducted in ABA including goals, procedures, and effects. When reviewing goals of a particular study, social validation would assess whether the specific goals targeted during the intervention are actually what is desired by the participants themselves, educators, and caregivers who work with the individuals participating in the study. By assessing the social validity of the procedures, researchers assess the extent to which the procedures being used as part of the study are seen as "acceptable" by consumers or care providers. Finally, when assessing effects, researchers ask if the participants and others are satisfied with the results of the study. Wolf expressed that one of the concerns with the use of social validation was the reliance on subjective data. When Wolf discussed social validity with colleagues, a concern was expressed by other researchers about the potential use of subjective data in ABA because of the discipline's focus on the use of rigorous, objective data (Wolf, 1978). Although if subjective data are reported and do not support the effectiveness indicated with empirical data, this could be problematic for any field; but validation by participants and/or their caregivers can be important on many levels.

Kennedy, (2002) expanded on the methods described by Wolf (1978) of social validity by suggesting that maintenance of behavior change should be considered as a variable for social validation. That is, once a study is complete, do the participants or caretakers maintain the same level of support for the intervention; and if so, is this because they were satisfied with the intervention and its effects pertaining to themselves or the participant. Kennedy also asserted that by collecting maintenance data showing continued use of the intervention with positive effects, it would represent more substantial information for social validation relative to qualitative surveys regarding how people feel about the intervention.

While many intervention studies have data and evidence to show their effectiveness, those that also include information on the extent to which key stakeholders perceive the importance the goals, procedures, and effects of intervention may have more relevance (Schlosser; 2003). Use of social validity assessments that report a lack of acceptability could also drive changes in intervention or evaluations that could examine variables that might be hindering acceptance of the intervention. Knowing that social validity assessment is an important component of single-case design research and that key researchers have suggested its use for years, (Kazdin, 1977; Kennedy, 2002; Wolf, 1978) increased use of social validity over the years might be expected. Meta-analysis have been conducted examining the rates of social validity in behavior analytic research (Carr, Austin, Britton, Kellum, & Bailey, 1999; Kennedy, 1992).

For example, Kennedy (1992) reviewed measurement of social validity for all articles published in both *Journal of Applied Behavior Analysis* (*JABA*) and *Behavior*

Modification from 1968 to 1990. Approximately 20% of articles published social validity assessment and results, (Kennedy, 1992). Carr et al. (1999) extended Kennedy by reviewing articles in *JABA* from 1968 to1998. This review examined social validity measures of treatment outcomes and treatment acceptability. Results indicated approximately 25% of research conducted and reported on social validation of treatment outcomes and acceptability. While a framework for conducting social validity in AAC research has been developed (Schlosser, 1999), to my knowledge no literature reviews of social validity pertaining specifically to AAC intervention have been conducted since.

The purpose of this current review was to examine aspects of social validity assessments pertaining to communication intervention research conducted from 2005 through 2015 to determine (a) the rate of social validity assessments; (b) the level of the intervention including goals, intervention/methods, and effects; (c) the methods used to assess social validity; and (d) who was assessed.

METHODS

Study Selection

Studies were included in this review if (a) the participants of the study, no matter the age, had a diagnosis of autism and/or intellectual disability, (b) the independent variable addressed communication training with use of AAC intervention that was designed to increase the participants ability to communicate, (c) the AAC intervention consisted of picture exchange communication (PECS), use of speech-generating devices (SGD), or Rapid Prompting Method (RPM), (d) used single-subject research methodology (with the

study for RPM that was reviewed being the exception for purposes of this review) and (e) it they were published in a peer-reviewed journal between the years of 2005 and 2015. This range of years was selected because the invention of smart devices and development of speech generating software for these devices began within this time period. Again, the RPM study reviewed is an exception as the publishing journal, *Frontiers in Psychology*, is considered an open source, non-peer reviewed journal. For the purposes of this review, studies that met inclusion criteria were then grouped by category based on the type of communication system used (i.e. PECS, SGD, RPM).

The researcher located studies from 2005 to 2015 through (a) a digital library search using PsychINFO, ERIC, and lib.utexas.edu and (b) a manual search of one peer-reviewed journal (i.e.*,Developmental Neurorehabilitation)* and a manual search of one open source, non-peer reviewed article *(*i.e. *Frontiers in Psychology).* Searches were conducted with individual terms as well as different combinations of the following terms: functional communication training, autism, speech-generating device, picture exchange, rapid prompting method, and intervention. Eighty-eight articles, including one erratum reprint, addressing communication with assistive technology that met all selection and inclusion criteria were found in 15 of the 27 journals that published articles about AAC intervention (Appendix A and B).

Analysis of the Studies

Coding sheets were developed and used to collect data based on the procedures described by Hurley (2012) on (a) whether social validity assessments were used, (b) the

method used to assess social validity (e.g., questionnaires, comparison of performance to individuals whose behavior would be considered typical; Kazdin, 1977), and (c) timing of the social validation (e.g., pre-intervention, post-intervention, both). Additionally, the components of the research that were the focus of socially validation were coded (Appendix D). These included goals and why they would be important, acceptability of the procedures, and the satisfaction of the effects of the intervention. Finally, the person(s) assessed for social validation was recorded (e.g., the participants of the study, parents, educators, peers).

RESULTS

Of the 88 articles reviewed, 23.9 % (n = 21) reported social validity assessments (Appendix C).

Social Validity: Assessment of Goals

Nine studies (10.2%) assessed social validity to assess whether the target behavior for change was important to participants, caregivers, and educators. Three methods were utilized in which researchers determined social validity of goals in each of the nine studies.

Structured Interviews

Three of the nine studies used a structured interview process to assess social validity of goals. Chung and Carter (2013) used a structured interview to assess the perceptions of parents, teachers, and paraprofessionals about the social significance of what was

addressed. All reported that the goals of the study aligned with the current needs of the students. Hughes et al., (2011) used a structured interview as one component of their social validity assessment. The structured interview was used prior to the study with the participants to determine the social significance of having more friends in the different settings they participated in throughout the day. Jurgens, Anderson, and Moore (2009) used interviews as one component of social validity to determine the participant's mother, teacher, and speech therapist's perspectives to identify the behaviors that required intervention.

Questionnaire

Seven of the nine studies utilized a questionnaire to assess social validity of goals. Banda, Copple, Koul, Sancibrian, and Bogschutz (2010) used a survey to ask instructional staff about the importance of students being able to communicate requests in the classroom. All participants rated this as very important. Cannella-Malone, Fant, and Tullis, (2010) used a questionnaire to ask the teachers and mother of one participant if social communication was an appropriate and important goal. All indicated it was appropriate and important. Chung and Douglas (2015) used a questionnaire to interview paraprofessionals, general and special education teachers as well as the SLP. Only the paraprofessionals responses for goals were reported. They reported they, "valued the goal of this project." Flores et al., (2012) used a questionnaire as one component of social validity. Program staff who worked with the students indicated there was a definite need for communication for the participants involved in the study. Jurgens et al. (2009) provided

a questionnaire to the parent, teacher, and speech-language pathologist to address several components of the study. Part of the questionnaire specifically addressed the social significance of the target behavior. Park, Alber-Morgan, & Cannella-Malone (2011) assessed social validity by asking the moms of participants if they felt the goals of the intervention were acceptable. All of the mothers reported the goal of teaching the children PECS and training them, as parents, how to use PECS were very important. Smith, Hand, and Dowrick (2014) also used a questionnaire. The questionnaire was not available as part of the publication and not enough information was given to determine what was asked but the researchers indicated that all components of the study were addressed in the survey given to paraprofessionals and speech pathologist.

Review of Current IEP goals.

One of the nine studies reviewed the IEP goals as part of their social validity measures for goals (i.e., Flores et al. 2012). Specifically, Flores et al. reviewed the IEP and subsequently, staff indicated the need for communication when reviewing the IEP goals for all participants of the study; each had goals for increasing communication due to a deficit in this area.

Social Validity: Assessment of Procedures

Fourteen studies (15.9%) assessed social validity to determine how participants, caregivers, and educators viewed the procedures that were used during each study. There

were three methods in which researchers determined social validity of procedures in each of the fourteen studies including structured interview, questionnaire, and rating scales.

Structured Interview

Two of the fourteen studies that assessed for social validity of procedures utilized structured interviews. Chung and Carter (2013) conducted a structured interview post-intervention with questions related to procedures with peer partners, paraprofessionals, general educators, and the parents of students who participated in the study. They all reported the procedures "were appropriate, useful, and practical" and that they wanted to continue to use the strategies when the research had concluded. A parent reported she was glad the school staff were now more aware of how to use and program the SGD. Peer partners reported their experience as "pretty cool,"; paraprofessionals reported the procedures as "manageable." Paraprofessionals also reported some challenges as there were times certain messages related to lessons were not on the SGD and if they had known in advance they could have kept the student on task and able to prepare for the lesson. Jurgens et al., (2009) used structured interviews with the participant's teacher and speech therapist to assess the appropriateness of the intervention. Both reported a "positive perception of the PECS training program."

Questionnaire

Twelve of the fourteen studies that assessed for social validity of procedures used questionnaires. Banda et al. (2010) questioned all instructional staff who knew and worked

with the participants at the conclusion of the study. Questions related to procedures asked how feasible the research was to conduct in the classroom as well as the use of video modeling as an intervention to teach communication with a SGD. Overall, staff indicated the research went well and was easy to implement in the classroom and that video modeling was easy to use. Cannella-Malone et al. (2010) asked three of the participant's teachers if the procedures were easy to understand and could be implemented in the classroom. All responded favorably and that they would like to use the intervention. One participant's mother was given a parent questionnaire and she reported that she had a positive view of the intervention and would like to extend it to further skills. Chaabane, Alber-Morgan, and DeBar (2009) questioned parents and found that procedures were reported as "easy to implement." Chung and Douglas (2015) assessed social validity from paraprofessionals about the procedures. The paraprofessionals felt the training procedures were sufficient. Cihak, Smith, Cornett, and Coleman (2012) reported that all three instructors questioned said that the intervention was useful and necessary for communication for the participants. Classroom teachers also reported the intervention procedures were easy to implement and add to the daily schedule. Dogoe, Banda, and Lock (2010) questioned parents about procedures. Both parents reported they found the treatment package acceptable, was not costly to implement, and the intervention did not seem to have any disadvantages for the participating children. They also reported the procedures were easy to implement in the home setting. Greenberg, Tomaino, and Charlop (2012) assessed parents' attitudes regarding PECS. They reported that implementation of PECS was very feasible and easy to use. They also stated PECS was easy to prepare for use although two parents did indicate

that they did not always have pictures of all items their kid needed. Kent-Walsh, Binger, & Hasham, (2010) assessed parents for social validity of procedures. Parents reported a "high rate of satisfaction" and felt the instruction for their child in the home setting was a critical component of the intervention. Jurgens et al. (2009) questioned the teacher, speech therapist, and mom about the PECS training program that was used as the intervention. All demonstrated favorable views of the PECS program and the parent stated the training was very "straightforward" and "not stressful." Park et al. (2011) used a questionnaire to assess parents' satisfaction of procedures. Parents reported the use of PECS in their homes as "feasible." They also reported the teaching procedures of PECS as something they could perform comfortably. Smith et al. (2014) used a questionnaire to report on all components of their study. No further information was provided on what was specifically asked but the two teachers' aides and speech therapist all reported they would recommend and use the intervention again. Trottier, Kamp, and Mirenda (2011) questioned the peer mediators who participated in the intervention. Students were asked if they enjoyed the play sessions. All six peer mediators reported they liked participating in the games and would like to participate in future activities again. They also reported they could show their classmates who were targeted for intervention how to use their SGD in the future based on what they had learned.

Rating Scale

One study assessed social validity of procedures through use of a rating scale. Strasberger and Ferreri, (2014) surveyed teachers using the Behavioral Intervention Rating

Scale (BIRS; Elliott and Treuting 1991). Teachers completed the rating scale and reported the intervention as acceptable. All teachers reported the intervention as appropriate and fair. It was also reported that social validity measures were assessed for same-age peers and they reported the intervention as acceptable. However, the method of social validation utilized with peers was not reported.

Social Validity: Assessment of Effects

All twenty-one (23.9%) articles that assessed for social validity examined the validity of the effects of their study using methods that included structured interview, questionnaire, and/or rating scale.

Structured Interview

Four of the 21 studies that conducted social validity on the effects of their study used structured interviews. Chung and Carter (2013) met separately with the participants, peer partners, paraprofessionals, teachers, and parents at the conclusion of the study to determine their views on the outcomes of the use of SGD. The participants provided brief answers to the structured interview but reported they liked being able to communicate with their peers. Peer partners reported they seemed to interact more with the participants when they used the SGD. Paraprofessionals reported positive changes and more interactions throughout the school day for the participants. Teachers indicated they observed an increased use of the SGD relative to before the study and that students appeared to like the conversation with use of the device. Parents reported an increase in use of SGD for their

children. One parent reported the increase could be attributed to the fact that everyone at school was involved in the study and because everyone was using the SGD with him, he had more opportunities to learn to communicate. Chung and Douglas (2015) interviewed both students who were targeted during the intervention as well as their peer partners about their experiences during the study. The researchers asked the participants if they now enjoyed talking to their peers using their AAC and they responded "yes." Peer partners also indicated they liked talking to their peers and even talked to them outside of the class setting now. Jurgens et al. (2009) used structured interviews to ask the classroom teacher and speech therapist about the importance of the results of the study. Both reported an increase in the participants' communication skills with use of PECS. Travis and Geiger (2010) interviewed both parents and educators. They all reported seeing some benefit to the PECS intervention.

Questionnaire

Seventeen of the 21 studies used questionnaires to assess social validity of effects. Banda et al. (2010) asked instructional staff about the gains each student made after participation in the study. All responded by stating that the SGD intervention had benefited the participants in some way. Cannella-Malone et al. (2010) asked one parent and three teachers about the effectiveness of the intervention. The parent responded to the questionnaire by stating her child had benefited from the intervention and she could see improvements and wanted to continue use of PECS. Teachers reported they would like to continue the use of the intervention in the classroom. Carré, Le Grice, Blampied, and

Walker (2009) evaluated parents and teachers. The teacher reported the student seemed more aware and also reported an increase in communication and decrease in challenging behaviors. One teacher reported no noted changes in behavior or communication after the intervention but the parents of that student reported improved communication at home. Carson, Moosa, Theurer, and Cardy (2012) used a parent questionnaire to ask parents about the frequency and duration of PECS use away from the clinic and any changes to behavior and communication that might have resulted from the intervention. All parents reported an increase in communication at home. Specifically, parents reported use and focused instruction with PECS in the home, away from the intervention setting (4 – 6 hours per week) as opposed to the limited use of communication they had reported at the beginning of the study. Chaabane et al. (2009) reported that parents were happy with the results of the intervention and wanted to continue to use PECS after the study was complete. Chung and Douglas (2015) asked paraprofessionals, general and special educators, and an SLP questions about social validity of effects using a questionnaire. The paraprofessionals felt the students benefited from the outcomes of the study. They reported increased interactions for the students outside of the classroom. The teachers reported peers looked forward to communicating with the students now and also reported an increased use of their SGD after the intervention. Cihak et al., (2012) asked the special education teacher, an intern, three general education teachers, and three paraprofessionals to answer questions regarding effects of the intervention for each child. All responded that the use of the intervention had a positive effect on all of the children. They also reported that the intervention increased interactions of their students. Dogoe et al. (2010) conducted social validation with a

questionnaire about effects with parents of the participants in their study. Both parents reported the intervention was effective, the outcome would make "permanent improvements" for their children, and would allow for positive outcomes in the future. Douglas, McNaughton, and Light (2013) used a questionnaire after the training to ask the paraeducators if they noticed any changes in communication with the students they supported. They reported that as teachers, they learned to wait for the students to respond and they observed improvements in communication with the students because of this. Flores et al., (2012) asked program staff about their views on how the intervention might have impacted their students after the intervention was complete. Staff reported students seemed to communicate faster with use of their devices and that it was easy for them to manipulate. They also reported it was easier for them as staff to use the device and that they preferred the devices to the picture exchange system that many of the students were using prior to the intervention. Greenberg et al. (2012) asked parents about social validity of effects using a questionnaire. Parents reported the intervention helped their children communicate in all settings. Hughes et al., (2011) used a questionnaire with the conversational partners to assess the acceptability and effectiveness of the use of a communication book to have a conversation with their peers who had CCN. The partners reported the students were more likely to initiate conversations after the intervention and that they enjoyed their interactions. They also indicated the communication books helped the students talk. Jurgens et al. (2009) used a survey to ask the mother of the participant about her views on the results of the PECS intervention. The mother reported an increase in her son's communication skills and she observed improvements at home in both

expressive and receptive language as well as his behavior. Kent-Walsh et al. (2010) used a questionnaire to ask parents about the effects of the intervention. All parents reported increased communication. Also as part of the social validation of effects, parents were asked to view videos that were filmed both before and after intervention. In the social validation questionnaire they completed after watching the videos, all responded that the students participated in communication more in the post-intervention videos. Park et al. (2011) assessed social validity of effects by asking mothers if they felt the outcomes of the intervention were acceptable. All participants reported their children learned to communicate through use of PECS. Smith et al. (2014) asked two teacher aides and the speech therapist for feedback on all aspects of the study and reported they were "very pleased with the outcomes" of the intervention. Trottier et al. (2011) interviewed the peers who were play partners with the participants of the study. The play partners were somewhat confident the use of the SGD would help the participants to play with others in the class.

Rating Scale

Two of the 21 studies used published rating scales to assess the social validity of the effects of each intervention. Boesch, Wendt, Subramanian, and Hsu (2013) used a modified Treatment Acceptability Rating Form that was originally developed to assess parents' perception of treatment effectiveness of behavioral intervention in outpatient clinics (Reimers & Wacker, 1988). Parents and one participant's behavior therapist were asked about the treatment effectiveness and any possible negative side effects of the treatment. All reported the strategies were likely to make permanent, meaningful changes

for the children in terms of communication. They also reported no negative side effects with the use of SGD or PECS. They also modified the rating scale to include one open ended question as part of their social validity assessment but not enough information was given to show if that question's response provided information related to goals, procedures, or effects of social validity. Strasberger and Ferreri, (2014) had teachers rate effectiveness of the use of SGD using the BIRS (Elliot & Treuting, 1991). The teachers gave high ratings for "no negative side effects." Low average ratings of 3.7 out of 6 indicated a "positive change noted" and that behaviors were no longer an issue.

It should be noted that authors of one study (i.e., Beck, Stoner, & Dennis, 2009) reported that they conducted social validity but when reviewing their methods, they stated that subjective information was observed and verbally reported, but not documented directly. Therefore, the information was not included as part of this review since it did not meet the criteria for social validity set forth in this study.

Interrater Agreement

Articles were independently scored to assess interobserver agreement (IOA) by a second person from the same graduate program as the author. IOA was scored using the methods described by Carr et al. (1999). Occurrence plus nonoccurrence were calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100%. 18 of the articles reviewed (19.1%) were randomly chosen to be assessed as part of IOA. Mean IOA for treatment acceptability for appropriate goals and

the appropriateness of the intervention was 96.5% (SD = .85; range, 96.5±100%). Mean IOA for treatment outcome measures was 94.1% (SD = 1.43; range, 94.1±100%).

Timing of Assessments

When reviewing the timing of each social validity assessment, a majority of the studies conducted their assessments after the intervention was complete.

12 studies reported post-intervention social validity. While three studies did not specifically report the timing of their assessment, it can be assumed the studies conducted their social validation post-intervention based on the questions asked. Three studies conducted pre and post-intervention assessment. Five studies did not report timing of when they conducted social validity (Appendix C).

DISCUSSION

In summary, this review summarized the existing literature on AAC intervention that included a social validity component as part of the methods, the method used to assess social validity, the timing of the social validation, and the components of the intervention that were the focus of socially validation. The results indicate that social validation measures conducted in the reviewed AAC intervention research is at a similar rate to that of past literature reviews of the behavioral literature assessing social validity (Carr et al., 1999; Kennedy, 1992).

Limitations to this review might include the scope of the articles that met inclusion criteria. While there are multiple modes of communication used to teach functional

communication that have been the focus of many studies, (e.g., Ogletree, Davis, Hambrecht, & Phillips, 2012; Tan, Trembath, Bloomberg, Iacono, & Caithness, 2014; Valentino & Shillingsburg, 2011; Winborn-Kemmerer et al., 2010; Yoder & Layton, 1988) the focus of SGD and picture exchange was the primary focus in the current review. Studies looking at picture exchange was limited specifically to studies looking at the PECS methodologies as a component of the intervention package. RPM, while not considered an evidence-based practice, was included in this review as there is a growing movement of parents requesting this type of communication be used to teach language to students in the public school setting (Autistic Self Advocacy Network, 2016). Types of social validity reviewed were limited to structured methods that provided consistent feedback across all participants who took part in social validity assessments for each study. Anecdotal information related to social validity was not included in the inclusion criteria but could be considered in future research. While this study looked at studies published in multiple journal publications, other studies have focused on specific journal publications and the use of social validation within those journals (Carr et al., 1999; Kennedy, 1992; Schlosser, 1999). A review of journal publications specific to behavior analysis as well as AAC is suggested based on the framework developed by Schlosser (1999) to look at other forms of AAC that are commonly used to address communication needs. Kennedy (2002), indicated that social validity can also be measured by looking at maintenance data and whether or not the intervention continues to be effective, rates of responding for follow-up data were also not considered as a mode of social validity when reviewing research. Future research could look at how many studies returned for follow-up data to determine if

continued use and effectiveness of the intervention as demonstrated by the data would indicate validity through the participants and caregivers continued maintenance of the intervention.

CONCLUSIONS

When comparing the percentage of articles that assess social validity to rates that were found by Carr et al. (1999), social validity is still not being assessed at a rate that would indicate caregiver feedback and or perception of the multiple components of single case designs are considered important factors when determining effective intervention. Social validity should be a component of intervention that is highly considered when determining the effectiveness of an intervention. If the caregivers and educators who are with the child on a daily basis after the intervention has been conducted do not have "buy-in" or see the intervention as important and effective, the likelihood of the intervention continuing after the fact is limited (McNaughton et al., 2008). When determining interventions, researchers should not only be looking at the short term effects if intervention during treatment phases of a single case design but should also be looking at potential long-term effects that could impact the quality of life for participants as well as their caregivers. Hamm and Mirenda (2006), examined the quality of life of adult individuals who had received special education services at school age and had documented AAC intervention as part of their IEP. While in special education, they had received intervention for CCN with use of AAC. Of the 79 individuals documented in school records, eight responded to the request for consent to be part of the study. Of these eight,

when questioned about their quality of communication, seven participants (through assistance from a caregiver or direct communication from the caregiver) reported a poor quality of communication and they needed additional instruction to address communication needs. Data also showed that seven participants relied on gestures and vocalizations with fewer than 10 known words, as well as other modes of communication unaided by any AAC (i.e. eye gaze, manual sign). The one participant with higher scores was reported to be able to use a computer to write letters to others. This was also the only one of the participants still using the technology provided to her by the school for communication. Five participants used some type of "nonelectronic" communication book or even pictures from magazines to be able to communicate. When speaking with participants and their families, reasons as to why they no longer utilized their technology devices that were given to them varied. Some of the devices no longer worked and families were unable to afford to buy new devices. One student did not get to bring her device home once she finished school.

This information raises the question of whether the families were asked at the time the students were still in school and accessing services, what type of communication they would have preferred that would help to increase their quality of communication over the long-term. During practice, I hear many arguments about the use of an iPad© as SGD as opposed to Vantage© or Dynavox© because of price (Apple Inc., 2016; Prentke Romich Company [PRC]., 2016; Tobii Dynavox, 2016). Even with the price comparison, iPad© is still a considerable cost for a family of an individual who has special needs and requires lifelong care. For example, Hamm and Mirenda (2006) reported that while the school

determined technology and devices were the most appropriate mode of communication, as adults more than half of the individuals that participated in the follow up had some pictures or a book of pictures to help them with communication. With that information, it would seem that talking with caregivers and family members who will be with the individuals with CCN for the long-term would be an important step in determining the desired goals and outcomes for the individual – not just while they are in school but when they are in their 30s and 40s and beyond. It would seem more applicable to use PECS to teach language and communication skills. The cost is low and finding or printing pictures to add to the communication book would be low and could continually be added to throughout the individuals' lives.

Studies have shown that when parents and teachers are asked for input through social validation, they have a high rate of responding as well as high rates of agreements on programming for their children (Callahan, Henson, & Cowan, 2008; Callahan, Shukla-Mehta, Magee, & Wie, 2010). This information, along with the above information on what happens when parents are not involved in the decision making begs the question why researchers are not taking into consideration parent input on interventions that are being currently recommended. King, Batorowicz, and Shepherd (2008) recommended that researchers consider and begin to practice "practice-relevant research." This would involve a process, prior to conducting any intervention, in which researchers would make a point of understanding the history and background of the family and children they would be working with along with the desired goals they have for their child.

If researchers are hesitant to conduct social validity assessments due to their subjectivity (Wolf,1978), use of maintenance and follow up data could potentially be utilized as a form of social validity (Kennedy, 2002). An example of follow-up data that potentially supports this form of social validation can be seen when reviewing a study that looks at the long-term effects of PECS on communication skills. At a 12-month follow up to a study where students were taught to use PECS for communication in comparison to a group who received traditional speech services, results showed the students who received instruction in PECS performed significantly higher than students who had received conventional language therapy (Lerna, Esposito, Conson, & Massagli, 2014). This is a prime example of social validation using methods Kennedy described through use of maintenance and follow-up data. If a researcher goes back and finds that maintenance or follow-up data is considerably lower or back to baseline, this could be an indicator for future research for participants and/or allow for an opportunity to trial practice-relevant research.

CHAPTER 3: Method

SETTINGS AND PARTICIPANTS

This study was conducted at a public university located in Texas. Similar to Achmadi et al., (2015), participants were undergraduate students (e.g., approximately 40) enrolled in two separate cohorts in the Department of Special Education. The courses focused on classroom management when working with students in special education as well as students completing practicum hours in special education classroom settings. Students likely had minimal expertise and training prior to their coursework regarding functional communication or what would be considered best practice when making decisions about communication modalities with individuals with ASD and other developmental disabilities.

Anonymity of the participants was ensured, as I did not collect any identifying information other than the basic demographics for statistical purposes. Demographic information from the students completing the survey was also collected that included age, gender, the type of student they are, and how many years of hands-on experience or training they have with any of the systems being presented in the videos. Participation in this study did not interfere with or impact their grades or instruction from the classes in which they were recruited. Recruitment of participants occurred at the end of class on a selected day that was predetermined via collaboration with class instructors. At the end of class, I explained the study and then passed out informed consent forms for signature. Students who returned the completed informed consent were then be provided with a survey form

consisting of questions to answer after watching the videos. Students who chose not to return the informed consent forms were not given a survey to complete.

VIDEO SCENARIOS

For the purpose of this study, video clips freely available via the internet were used to demonstrate two individuals engaging with a picture exchange communication system (PECS), a speech generating device with the software Proloquo2Go©, and the Soma® Rapid Prompting Method. During each video clip, the communicative partner engaged with the nonverbal child and he/she responded to the question with the communication modality. Each video was approximately 90 seconds in duration. The videos were chosen on the basis that the individual who used the communication device in the video was able to communicate fluently (i.e., non-intervention or training). For example, while PECS has many phases of components of training for an individual who is learning to use that particular communication system, the individual in the video performed at a fluent level indicating he had mastered the phase of PECS being used and was communicating independently at that level (Frost & Bondy, 2002). To maximize validity of the videos chosen, each video featured either the creator herself using the communication system with individuals with a developmental delay; or the creators had uploaded video clips of users to their webpage as examples of correct use of the communication system (Assistiveware, n.d.; Barbara D'Amora, n.d.; PECS, n.d.)

SURVEY

A questionnaire was developed based on a previous study that examined social validity of different modes of communication (i.e., Achmadi et al., 2015). My rationale for using this questionnaire (i.e., the Augmentative and Alternative Communication Social Validity Survey) was that the assessment of social validity conducted by Achmadi et al. was also applied to modalities of communication targeting individuals with ASD and other developmental disabilities. Specifically, Achmadi et al. (2015) examined the acceptability and preference of modes sometimes chosen for communication (i.e., manual sign; PECS; speech generative devices). The Augmentative and Alternative Communication Social Validity Survey consists of Likert scale-based items in which possible answers include (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly Agree. Participants completed the survey three separate times.

PROCEDURES

After gaining informed consent from each participant, I read a statement with information prior to showing them the videos: *In the following videos you will see someone communicating using a variety of devices. These devices include a speech-generating device, picture exchange communication system, and rapid prompting method.*

The participants were then shown each of the three videos consisting of the three different modes of communication. The beginning of each video had information telling what type of AAC device was about to be seen. For example, the PECS video started with the words "Picture Exchange Communication System" on the screen prior to the video starting.

Following each viewing, participants were prompted to answer eleven survey questions that addressed four categories: intelligibility, ease of acquisition, effectiveness and acceptability, and preference. Four questions addressing intelligibility were asked as part of the survey: 1) I think this AAC system is like natural speech. 2) I think this AAC system would be understandable to parents and teachers for children with autism spectrum disorder/intellectual disability. 3) I think this AAC system would be understandable to familiar adults of children with autism spectrum disorder/intellectual disability. 4) I think this AAC system would be understandable to unfamiliar adults. Two questions were asked about the ease of acquisition for the AAC being surveyed: 1) I think this AAC system would be easy to learn to use. 2) I think the AAC system would be easy for children with autism spectrum disorder/intellectual disability to use. Three questions surveyed effectiveness and acceptability: 1) I think this AAC system would be effective in the community. 2) I think this AAC system is the best method of nonverbal communication. 3) This AAC system would not draw undue negative attention to the user. Last, two questions surveyed preference: 1) I would choose to use this AAC mode if I were unable to speak. 2) I would prefer my child to use this AAC system. The survey also included a section at the end for participants to fill out to indicate their level of training or hands-on experience in years and months with each AAC device surveyed (Achmadi et al., 2015).

When each of the participants indicated that they were finished, I asked them to make sure they had filled out the survey in its entirety. I then collected the surveys. Time allotted to complete all components of this research including obtainment of consent,

watching the videos, and answering any questions the participants might have prior to completing the survey was approximately 25 – 30 minutes.

DATA ANALYSIS

Similar to Achmadi et al. (2015), I analyzed data by calculating means, standard deviations, and conducting paired *t*-tests along with Cohen's *d* to assess potential significance between obtained scores across the three modalities of communication. I did this for each of the four item areas (i.e., intelligibility; ease of acquisition; effectiveness and acceptability, and preference). Significance was set at $p < 0.004$ to protect against Type 1 error rates. This value was lowered using the Bonferroni correction to account for the number of comparisons being performed.

Chapter 4: Presentation and Analysis of Data

The purpose of this study was to investigate the social validity of RPM relative to other evidence-based AAC interventions. Results below indicate perception of the intelligibility, acquisition, effectiveness, and preference of three augmentative and alternative communication devices that include RPM, PECS, and SGD.

PARTICIPANT TRAINING AND EXPERIENCE

Students were recruited from two Department of Special Education cohorts (i.e., one in their first year; one in their second year) at a southwestern-based university. 43 undergraduate students (Female 95.3%; Male 4.7%) participated in the surveys. Their training or experience working with each of the AAC devices viewed ranged from 0 to 15 years. Participant responses for PECS indicated a range of training and experience from 0 to 5 years (M = .40) with 55.8% not having any training or experience using PECS. Responses for training and experience with RPM ranged from 0 to 2 years (M = .06) with 93% of participants having no training or experience. Experience and training for SGD ranged from 0 to 15 years (M = .73) with 53.5% of participants having no training or experience with use of SGD (see Table 1).

AAC Device	N	Mean	Std Dev	Minimum	Maximum	Participants with no experience
PECS	43	0.3976744	0.9101252	0	5.00	55.8%
RPM	42	0.0619048	0.3200247	0	2.00	93.0%
SGD	42	0.7357143	2.4282706	0	15.00	53.5%

Table 1. Average experience participants had with each AAC intervention.

SURVEY QUESTIONS

Figure 1 shows results of the survey responses for each AAC device and each of the categories covered including (a) intelligibility, (b) acquisition, (c) effectiveness, and (d) preference. Eleven questions were asked with the showing of each video. Answers to the questions were based on a Likert scale based on the following scale: (1) = Strongly Disagree (2) = Disagree (3) = Neutral (4) = Agree (5) Strongly Agree.

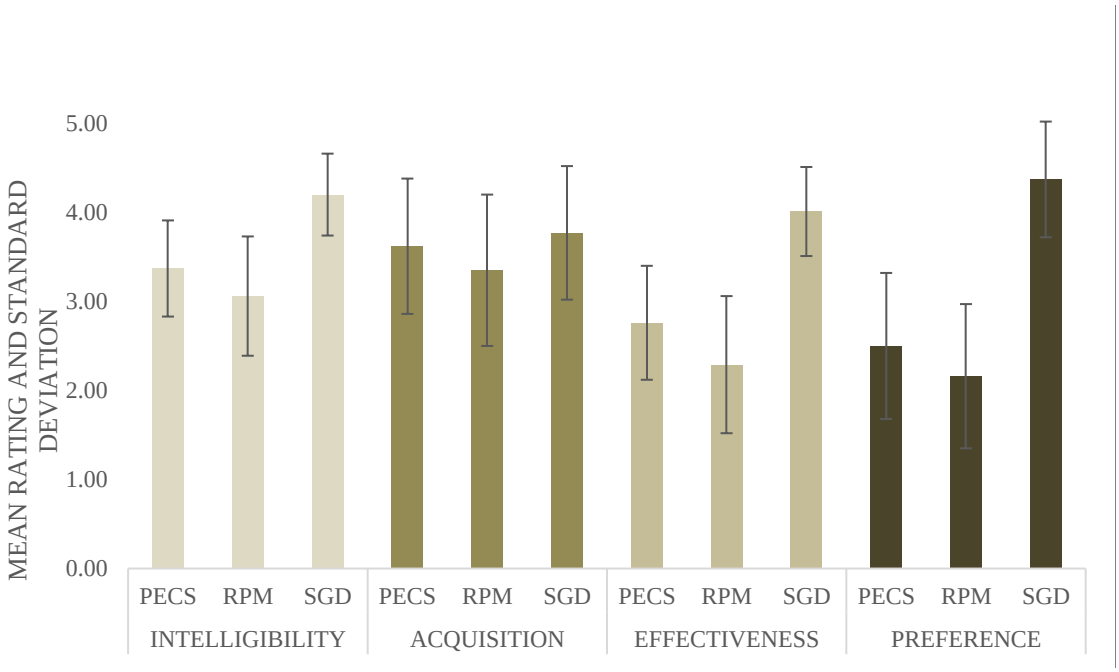

Figure 1. Mean rating and standard deviation of each response category.

Overall, SGD had a higher mean response rate across all four categories while RPM was rated the lowest, on average, among all four categories (See Table 2). SGD had a higher mean rating for intelligibility (M = 4.20, SD = 0.46) than PECS (M = 3.37, SD = 0.54) and RPM (M = 3.06, SD = .67). For acquisition, SGD had a higher response rate (M = 3.77, SD = 0.75) than both PECS and RPM. PECS (M = 3.62, SD = 0.76) scored higher than RPM (M = 3.35, SD = .85). Response rates for effectiveness showed SGD (M = 4.01, SD = 0.50) had a higher rate of responding than PECS (M = 2.76, SD=0.64) with RPM having the lowest (M = 2.29, SD = 0.77). Finally, responses for preference showed SGD to have the highest response rate (M = 4.37, SD = 0.65) with PECS being next (M = 2.50, SD = 0.82) and RPM having the lowest response rate (M = 2.16, SD = 0.81).

AAC Device		INTELLIGIBILITY	ACQUISITION	EFFECTIVENESS	PREFERENCE
PECS	Mean	3.37	3.62	2.76	2.50
	N	43	43	43	43
	Std. Deviation	.54	.76	.64	.82
RPM	Mean	3.06	3.35	2.29	2.16
	N	43	43	43	43
	Std. Deviation	.67	.85	.77	.81
SGD	Mean	4.20	3.77	4.01	4.37
	N	43	43	43	43
	Std. Deviation	.46	.75	.50	.65

Table 2. Mean ratings for each response category of the three AAC options.

In paired t-tests (see Table 3) significant differences were found for all comparisons with the exceptions of intelligibility of PECS and RPM, acquisition of PECS and RPM, acquisition of PECS and SGD, and preference for PECS and RPM. Cohen's *d* was also used to calculate the number of standard deviations between the means. The larger the effect size (>.80) the more significant the findings (Cohen, 1988). Large significance was found between PECS and SGD as well as for RPM and SGD in the categories of intelligibility, effectiveness, and preference. Significant findings (>.20) were found for PECS and RPM across all four categories and for acquisition of all three comparisons (Cohen, 1988).

AAC Device	Comparison	T	Df	p	Cohen's *d*
Intelligibility	PECS – RPM	2.73	42	0.009	0.52
	PECS – SGD	-9.19	42	0.000*	-1.67
	RPM – SGD	-9.38	42	0.000*	-2.01
Acquisition	PECS – RPM	1.94	42	0.059	0.34
	PECS – SGD	-1.15	42	0.257	-0.20
	RPM – SGD	-3.39	42	0.002*	-0.53
Effectiveness	PECS – RPM	3.65	42	0.001*	0.67
	PECS – SGD	-10.53	42	0.000*	-2.20
	RPM – SGD	-11.93	42	0.000*	-2.68
Preference	PECS – RPM	1.94	42	0.060	0.42
	PECS – SGD	-11.19	42	0.000*	-2.56
	RPM – SGD	-13.54	42	0.000*	-3.04

Table 3. Results of the Paired t-test and Cohen's d tests.

*Significant differences found for comparisons ($p < 0.004$).

Chapter 5: Conclusion

Surveys were used to assess social validity on different types of AAC devices that are commonly used or requested for individuals who have complex communication needs. The questions were asked in order to have a better understanding of how future special education teachers view different modes that are often requested by caregivers when choosing a communication system. Special education teachers spend a large part of a child's day with them and are responsible for teaching many of the skills necessary to be successful and independent. Data and assessments that are often conducted in the classroom setting weigh heavily on decision-making for interventions that are used; therefore, it is important to gain an understanding of future teachers' knowledge and perspectives of interventions that are both evidence-based and not yet tested for validity. The social validity questionnaire was used to gather perceptions of RPM relative to two other, evidence-based, AAC strategies that are often used in the school setting. In examining the social validation of each of the AAC devices, the survey questions addressed (a) intelligibility, (b) ease of acquisition, (c) effectiveness and acceptability, and (e) preference. Overall, the two evidence-based interventions scored higher than the intervention with no research to support its use. SGD was perceived highest in all categories, PECS was perceived somewhat lower than SGD, and RPM was scored lowest in each category.

POTENTIAL IMPLICATIONS

Overall, the participants indicated a stronger preference for SGD relative to the other communication modalities. As such, these results are similar to those reported by Achmadi et al. (2015). Specifically, Achmadi et al.'s finding indicated a higher perception of SGD relative to PECS and manual signing. There are several potential reasons for these results. As suggested by Achmadi et al., it is possible that the high ratings for SGD resulted from the speech output component as this component may be perceived as providing a response that more closely approximates "natural speech" (Achmadi et al., 2015), given its audio component, relative to the other two communication modalities. Achmadi et al. also suggested that the voice output component allows for a closer approximation to the predominant communication modality used in society; this may have also contributed to the high ratings for the SGD modality. Second, the SGD used in this study was an iPad. iPads and other similar style tablets are prevalent, and becoming more popular, throughout school and home settings, as well as society in general (i.e., iPads and related tables are thought to be owned by at least 45% of adults in the U.S.; Anderson, 2015). Thus, the increased popularity and number of smart devices in general, it is possible that this option appealed to participants due to familiarity of the device, even though they may not have been familiar with the particular application used for communication. Both PECS and RPM are not communication devices that are seen daily; while iPads and related smart devices are commonly observed throughout the day. A future study could potentially assess the social validity of iPads that are used as SGDs in comparison to different types of SGDs such as Dynavox, or GoTalk that are also commonly used for communication but not as common in everyday use as the iPad.

While the SGD may be more appealing than PECS, it is important to note that while SGD devices, such as iPads, may be perceived as more user-friendly and easy to learn for adults who may be communicative partners, PECS has a very systematic approach to teaching communication from which students might benefit. When staff members use the specific instructional methodologies addressed in PECS, individuals with communication delays can begin to develop use of functional language to have their needs met. As students begin to progress through the phases of PECS, it is possible they could eventually move to an SGD in order to accommodate larger vocabularies. Thus, while the SGD may seem more appealing, PECS may be more appropriate for an individual who may just be beginning to communicate.

Using the PECS approach, individuals are able to progress through phases that continually increase their language skills as well as their independence and spontaneous language; this progression and outcome is unlikely to occur with the use of RPM because a communicative partner is required to hold the board in order for the individual to communicate. Mukhopadhyay (2008) stated that assistance may be faded gradually, and the letterboard could be left on the table for the individual to utilize; but specifics on methodologies are vague and empirical evidence of individuals communicating at this level of independence does not exist. The example of independent communicating found on Mukhopadhyay's website consists of a video of an individual communicating with significant physical prompts to construct letters in order to form words which should not be considered as independent communication (Mukhopadhyay, n.d.).

An interesting question might pertain to the factors that contribute to families opting for a communicative strategy with no research to substantiate its use. When considering the end result when communication devices are utilized, most forms of AAC are implemented at a basic level initially, with individuals learning the basics of communication. For example, with PECS, students are initially taught using a very systematic approach to learn to exchange one card with a word or picture on it to gain access to an item (Frost & Bondy, 2002). The speed in which individuals communicate through the use of RPM is quite different and could be the reason parents are drawn to this mode of communication, even though no research authenticates its use and it is questioned by many in the scientific community (Lang et al., 2014; Tostanoski et al., 2014; Travers & Ayres, 2015; Travers, Tincani, & Lang, 2014). Mukhopadhyay states on her website that students should wait until the age of 7 to contact her for help ("What is Rapid Prompting™ Method," 2016). If a family who has struggled to find some form of communication contacts Mukhopadhyay at that point (i.e., child age 7), they may have already experienced years of limited-to-no communication from their child. To go from having years of what they may feel are unsuccessful attempts to find a way to communicate to instantly communicating almost immediately and the ability to engage in full conversations may be convincing to a loving parent who is so desperately looking for an answer.

That teachers-in-training rated a non-evidence based intervention lower across all categories than two evidence-based interventions (with peer review to support their use) is a compelling finding of the current study. While the survey did not answer the question as to why this might be the case, it may be the case that the level of independence necessary

for fluent communication with both PECS and SGD is clearly superior to RPM; RPM requires a heavy amount of prompting from the person holding the board in order to spell words, letter by letter. This facet of the respective interventions may have been a salient feature that impacted the perspective of the teachers-in-training responses. Independence is a large component and the ultimate goal for individuals with special needs while in the school setting. It's been noted in a longitudinal study that levels of independence decrease once students leave the secondary setting (Taylor & Seltzer, 2010). With a primary focus on independence, PECS and SGD could potentially be rated higher by future teachers because of the clear level of independent responding seen in each video of these evidence based interventions. It is also possible that questions regarding the extent to which the target individual in the RPM video was actually responsible for communication (rather than the adult prompter) may have impacted the ratings provided by the teachers-in-training. Future research should seek to elucidate the variables that impact perspectives of teachers-in-training regarding evidence (e.g., SGD; PECS) and non-evidence-based communication strategies (e.g., RPM)

LIMITATIONS

The current results should be considered in light of several limitations. One limitation of the current study pertains to the type of responses that were gathered for social validity. Specifically, a Likert scale was used to gather information from participants on their perception of each AAC device. While this information was informative in terms of preferences of future teachers as they pertain to communication modalities and students

who have communication needs, it does not answer the question as to "why" they would choose a particular device over another and what makes a communication system more appealing than the others. When considering the final results, we can only speculate as to why certain devices might seem more relevant or preferred. First, the SGD used was an iPad, a device that is readily available for personal and professional use to many. Use of the actual device requires little-to-no training so from an 'ease-of-use' standpoint, this might seem more feasible in comparison to PECS or RPM to individuals who have little to no training with different communication devices. With RPM's results being considerably lower than the two other AAC devices, this may be because of the high level of prompting, both physically and verbally, that was required to produce minimal communication (i.e., one letter) from a student to be able to spell a word; while both the iPad and PECS showed students responding independently with their AAC device. Future research could look at more open-ended interview type questions to gauge the reasoning behind why they prefer certain interventions over others.

The reporting method for participants might offer an additional limitation. The method of surveying the participants for their perceptions of each AAC device could have produced different findings than what they might actually do in situations when choosing a communication mode as survey bias can impact responses based on traits participants personally prefer (Phillips & Clancy, 1972). In addition, a majority of the participants had little to no training or experience with each device shown. Future research could target teachers with classroom experience who have specifically taught students who use or have used different AAC devices in which the teachers have been trained or had experience.

An additional limitation pertains to the participants themselves. Similar to Achmadi et al. (2015), the participants were all future special education teachers in a university-based special education program. While teacher input and perception of interventions is very important, especially during school years where their assessments and evaluation drive decision-making, we do not have an understanding of parent perception of the different AAC devices. Finding participants who are parents or other types of caregivers could impact the responses to each modality of AAC that was presented as parents sometimes have limited knowledge or inadequate training with various interventions, other than what they have seen with their own child (Bailey, Parette, Stoner, Angell, & Carroll, 2006). However, finding parents who support and use RPM to participate in studies of social validity may be difficult based on the information provided to them by Mukhopadhyay that indicates any form of scrutiny is not needed as it could lead to embarrassment (p.18), was not needed for Mukhopadhyay when she was a child (p. 16), and numbers don't tell Mukhopadhyay what she knows (p 2; Mukhopadhyay, 2008). Mukhopadhyay (2008) states that information about RPM is not measureable by objective data and also states that families understand the importance of teaching their child without waiting for experimental design to validate the use of RPM. Eight years after the publication in which she asserted that there is no need for research regarding RPM, her website currently states research has been completed on RPM and directs users to the Chen et al. (2012) study ("What is Rapid Prompting™ Method," 2016) which does not qualify RPM as an evidence-based practice and does not substantiate its use for communication (Cook, Buysse, Klinger, Landrum, McWilliam, Tankersley, & Test, 2014).

When looking at long term goals for communication in order to work with individuals with intellectual disabilities, parents are the one constant in their child's life who is there long after educators are no longer part of the picture. While we want to find what is most effective in building communication for individuals, parent input and buy-in with what is being utilized for communication is vital for future success. Future research could look specifically at parent perceptions of various AAC modalities including RPM.

An additional limitation could also be the type of social validation used to assess the communication interventions. Responses could be seen as subjective in nature as participants were giving their opinion of each intervention based on short video clips that showed each intervention being used fluently. For a more objective view, future research could also look at social validity based on Kennedy's (2002) recommendation by specifically testing each intervention and its effectiveness then returning for follow-up data at a later date. Follow-up data that shows continued use, effectiveness, and treatment fidelity would indicate high social validity for everyone involved in the intervention that was originally tested.

A final limitation is including RPM in the study as an AAC device. Travers, Tincani, Thompson and Simpson (2016) argue that identifying systems such as RPM and FC as AAC devices is erroneous. RPM has been shown to mirror and replicate the same qualities as FC (Tostanoski et al., 2014). While FC requires physical touch from a communicative partner in order to garner responses from an individual who is nonverbal (Sigafoos, 2002), RPM relies on the communicative partner to hold the letterboard for the individual who is nonverbal to then respond by pointing to the elevated board

(Mukhopadhyay, 2008). Multiple organizations including American Speech-Language-Hearing Association (ASHA), the credentialing organization for speech providers, have positions statements against the use of FC (ASHA, 1995). RPM has no scholarly evidence to authenticate its use for communication as the one study that has been allowed only looked at its ability to decrease repetitive behaviors. The authors of this same study specifically stated that during this study they were deferring the question as to whether or not communication was authentic (Chen et al., 2012). While researchers and experts have an understanding of the components and expectations of a peer reviewed communication intervention, this can become convoluted when parents request something that appears to be an effective communication intervention to individuals who do not have the training and background to understand it is not truly an effective mode of communication. The Office of Civil Rights responded to a case brought forth by parents seeking a specific form of AAC for their student. While this does not specifically change the law or requirements for public schools under IDEA, it can be interpreted that schools should consider non-evidence based interventions as part of an assessment that objectively looks at which type of AAC would be the most effective (Frequently Asked Questions on Effective Communication for Students with Hearing, Vision, or Speech Disabilities in Public Elementary and Secondary Schools, 2014). Implications of this are actually beneficial to schools when parents request RPM as a means of communication. When requests such as this are presented, the schools can then request consent for a communication or assistive technology evaluation to then systematically test RPM along with different forms of evidence-based communication interventions in order to find the most effective mode for each individual.

There are several potential avenues for future research. First, future research should continue to assess social validity pertaining to AAC interventions with a focus on using objective follow-up data as an indicator for social validation (Kennedy, 2002). Second, future research should continue to assess the scientific validity pertaining to RPM. Many researchers have expressed concern about RPM (e.g., Lang, Tostanoski, Travers, & Todd, 2014; Tostanoski, Lang, Raulston, Carnett, & Davis, 2014). At present, no empirical-based studies have been conducted to evaluate the effectiveness of RPM. Further, no studies have addressed a central concern regarding RPM in terms of who is actually producing the communicative responding during RPM. Specifically, questions remain about whether the communicative responding is the product of the nonverbal individual participating in the exchange or the communication partner who is holding the letterboard (Lang et al., 2014; Tostanoski et al., 2014). While one study has been conducted to quantitatively analyze videos vetted by Mukhopadhyay, the authors specifically stated, "we defer, for the moment, the crucial question of whether the communications produced during RPM therapy are genuine" (p. 4; Chen et al., 2012). Others have asserted that research is needed in this area (i.e., Lang et al., 2014; Tostanoski et al., 2014) and applied behavior analysts and other clinicians should continue to push for studies that will help determine the authenticity of communication through the use of RPM. In addition, researchers should conduct empirical-based research in pursuit of this question.

Additionally, public schools are to consider questionable forms of AAC, such as FC or RPM, that might be requested as part of a student's IEP (Frequently Asked Questions on Effective Communication for Students with Hearing, Vision, or Speech Disabilities in

Public Elementary and Secondary Schools, 2014). Development of a framework with a task analysis that might guide assessment teams with proper techniques is needed for AAC assessments that include FC and RPM. This framework is essential to properly assess which forms of AAC will provide the student with the best form of communication that will allow the individual to reach his/her full potential for fluent, functional communication that helps to increase levels of independence and the ability to advocate for their needs.

RPM is currently considered by many to be an example of a pseudoscience-based practice (Tostanoski et al., 2014; Travers & Ayres, 2015; Travers, Tincani, & Lang, 2014). Finn, Bothe, and Bramlett (2005) developed a checklist for practitioners to reference when determining if an intervention specific to communication disorders is a science or pseudoscience. Tostanoski et al. (2014) showed that RPM meets all the criteria for each of the ten discussion points provided by Finn et al. (2005). When reviewing the checklist, there are areas that researchers can continue to focus on so that RPM can be evaluated in a valid way to determine if, in fact, it truly is a pseudoscience; or, whether it may, in the future, be determined to be an evidence-based practice. Two items on the checklist that can be addressed easily are RPM's 'avoidance to peer review' and it not being testable (Finn et al., 2005). Mukhopadhyay's (2008) initial publication about RPM stated that parents "could have waited for scientific validation" but they chose to educate their children through RPM now instead of waiting for peer review. This was written over eight years ago; and in that time, only one study has been published on RPM (i.e., Chen et al., 2012). Chen et al. was observational in nature as the researchers reviewed videos that were selected by Mukhopadhyay; thus, no actual experimental manipulation of variables

occurred to test any of the methods that comprise RPM. Mukhopadhyay (2008) stated in her first publication that RPM is very individualized to each person who uses it. This would indicate that single case experimental design might be the most appropriate way to test the effectiveness of RPM; yet, this has not occurred. When this type of research is conducted, this could open the door for continued research and potential peer review, which is another area of concern on the pseudoscience checklist. If and when a single case design-based study is conducted, RPM may no longer have to rely solely on anecdotal and 'personal experience' reports to promote its use as the data provided from these types of studies will allow for objective information to interpret its validity (Finn et al., 2005).

CONCLUSION

The purpose of this dissertation was to assess the perspective and viewpoints of future special education teachers. Social validation of interventions recommended for use with individuals with special needs is an important factor that is, many times overlooked when looking at effectiveness or preference by those who will be implementing the intervention. The individuals in this study could potentially be part of a future decision that recommends a certain communication device for an individual who may need assistance in communication.

The results of this dissertation indicated higher ratings for both interventions that have research to support their use relative to the intervention with no evidence to support its effectiveness. The findings from this study point to a continued need for social validation of recommended interventions as well as questioning families and caregivers

about their preference for non-evidence based interventions. Future research could focus on comparing social validation of evidence-based practices and even looking at social validation of different high-tech AAC devices. Findings also suggest a continued push for validation of non-evidence based interventions that are being continuously preferred and requested by families even though there is no evidence to support their use.

Appendices

Appendix A. Journal Publications for Articles with Social Validity Assessments

Journal	Frequency
American Journal of Speech-Language Pathology	1
Augmentative and Alternative Communication	2
Behaviour Change	2
Canadian Journal of Speech-Language Pathology and Audiology	1
Child Language Teaching and Therapy	1
Disability and Rehabilitation	1
Education and Training in Autism and Developmental Disabilities	1
Focus on Autism and Other Developmental Disabilities	1
Journal of Applied Behavior Analysis	1
Journal of Autism and Developmental Disorders	1
Journal of Developmental & Physical Disabilities	4
Journal of Early Intervention	1
Research & Practice for Persons with Severe Disabilities	2
Research in Autism Spectrum Disorders	1
Topics in Early Childhood Special Education	1
Total	21

Appendix B. Journal Publications for Articles without Social Validity Assessments

Journal	Frequency
American Journal of Speech-Language Pathology	2
Augmentative and Alternative Communication	7
Australasian Journal of Special Education	1
Behavioral Development Bulletin	1
Behaviour Change	1
Clinical Case Studies	2
Clinical Linguistics & Phonetics	1
Developmental Neurorehabilitation	3
Education and Training in Autism and Developmental Disabilities	3
Education and Training in Developmental Disabilities	1
Evidence-Based Communication Assessment and Intervention	2
Exceptional Children	1
Focus on Autism and Other Developmental Disabilities	3
Frontiers in Psychology**	1
International Journal of Developmental Neuroscience	2
International Journal of Disability, Development and Education	1
International Journal of Special Education	1
Journal of Applied Behavior Analysis	3
Journal of Autism and Developmental Disorders	4
Journal of Developmental & Physical Disabilities	11
Journal of Intellectual & Developmental Disability	1
Pediatric Rehabilitation	1
Remedial and Special Education	2
Research in Autism Spectrum Disorders	9

Research in Developmental Disabilities	1
Teacher Education and Special Education	1
TechTrends	1
Total	67

Appendix C. Literature Review

Authors (Year)	Publication:	Social Validity Assessment?	Conducted Pre or Post Intervention	TYPE of Social Validity Assessment	Levels of Social Validity	Reporter
Banda et al. (2010)	Disability and Rehabilitation	YES	Post	Questionnaire	Goals, Procedures, Methods	Instructional staff
Boesch et al. (2013)	Research in Autism Spectrum Disorders	YES	Not noted	Rating Scale + one open ended question	Effects	All parents and one participants behavior therapist
Cannella-Malone, Fant, and Tullis (2010)	Journal of Developmental & Physical Disabilities	YES	Post	Questionnaire	Goals, Procedures, Methods	Parents and teachers
Carré et al. (2009)	Behaviour Change	YES	Post	Questionnaire	Effects	Parents and teachers
Carson et al. (2012)	Canadian Journal of Speech-Language Pathology and Audiology	YES	Post	Questionnaire	Effects	Parents
Chaabane et al. (2009)	Journal of Applied Behavior Analysis	YES	Post	Questionnaire	Procedures, Effects	Parents and significant others

Authors (Year)	Publication:	Social Validity Assessment?	Conducted Pre or Post Intervention	TYPE of Social Validity Assessment	Levels of Social Validity	Reporter
Chung and Carter (2013)	Research & Practice for Persons with Severe Disabilities	YES	Pre and Post	Structured Interview	Goals, Procedures, Methods	Parents, paraprofessionals, classroom teachers
Chung and Douglas (2015)	Journal of Developmental and Physical Disabilities	YES	Post	Questionnaire & Structured Interview	Goals, Procedures, Effects	Focus student, peer partner, paraprofessionals, general educators, special educators, and SLP
Cihak et al. (2012)	Focus on Autism and Other Developmental Disabilities	YES	Post	Questionnaire	Procedures, Effects	Special education teacher, teacher intern, general education teachers, paraprofessionals
Dogoe et al. (2010)	Education and Training in Autism and Developmental Disabilities	YES	Post*	Questionnaire	Procedures, Effects	Parents

Authors (Year)	Publication:	Social Validity Assessment?	Conducted Pre or Post Intervention	TYPE of Social Validity Assessment	Levels of Social Validity	Reporter
Douglas et al. (2014)	Journal of Early Intervention	YES	Post	Questionnaire & Structured Interview	Effects	Paraprofessionals and classroom teachers
Flores et al. (2012)	Augmentative and Alternative Communication	YES	Pre and Post	Questionnaire & Review of IEP	Goals, Effects	Program staff
Greenberg et al. (2012)	Journal of Developmental and Physical Disabilities	YES	Post	Questionnaire	Procedures, Effects	Parents
Hughes et al. (2011)	Research & Practice for Persons with Severe Disabilities	YES	Pre and Post	Questionnaire & Structured Interview	Goals, Effects	Participants about goals; conversational partners about effects
Jurgens et al. (2009)	Behaviour Change	YES	Pre	Questionnaire & Structured Interview	Goals, Procedures, Effects	Mother, teacher, speech therapist
Kent-Walsh et al. (2010)	American journal of speech-language pathology / American Speech-Language-Hearing Association	YES	Post	Questionnaire	Procedures, Effects	Parents

Authors (Year)	Publication	Social Validity Assessment?	Conducted Pre or Post Intervention	TYPE of Social Validity Assessment	Levels of Social Validity	Reporter
Park, Alber-Morgan, and Cannella-Malone (2011)	Topics in Early Childhood Special Education	YES	Post*	Questionnaire	Goals, Procedures, Effects	Parents
Smith, Hand, and Dowrick (2014)	Journal of Autism and Developmental Disorders	YES	Not noted	Questionnaire	Goals, Procedures, Effects	Teacher's aides and speech therapist
Strasberger and Ferreri (2014)	Journal of Developmental & Physical Disabilities	YES	Post*	Rating Scale	Procedures, Effects	Teachers
Travis and Geiger (2010)	Child Language Teaching and Therapy	YES	Post	Structured Interview	Effects	Parent and educators
Trottier et al. (2011)	Augmentative and Alternative Communication	YES	Post	Questionnaire	Procedures, Effects	Confederates - typically developing peers

*While the study did not specifically state the social validation occurred post intervention, it is assumed the assessment was given after the intervention as they asked questions about effects.

Appendix D. Types of Social Validation Conducted

Articles	Goals	Procedures	Effects
Banda et al. (2010)	X	X	X
Boesch et al. (2013)			X
Cannella-Malone et al. (2010)	X	X	X
Carré et al. (2009)			X
Carson et al. (2012)			X
Chaabane et al. (2009)		X	X
Chung and Carter (2013)	X	X	X
Chung and Douglas (2015)	X	X	X
Cihak et al. (2012)		X	X
Dogoe et al. (2010)		X	X
Douglas et al. (2014)			X
Flores et al. (2012)	X		X
Greenberg et al. (2012)		X	X
Hughes et al. (2011)	X		X
Jurgens et al. (2009)	X	X	X
Kent-Walsh et al. (2010)		X	X
Park et al. (2011)	X	X	X
Smith et al. (2014)	X	X	X
Strasberger and Ferreri (2014)		X	X
Travis and Geiger (2010)			X
Trottier et al. (2011)		X	X

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